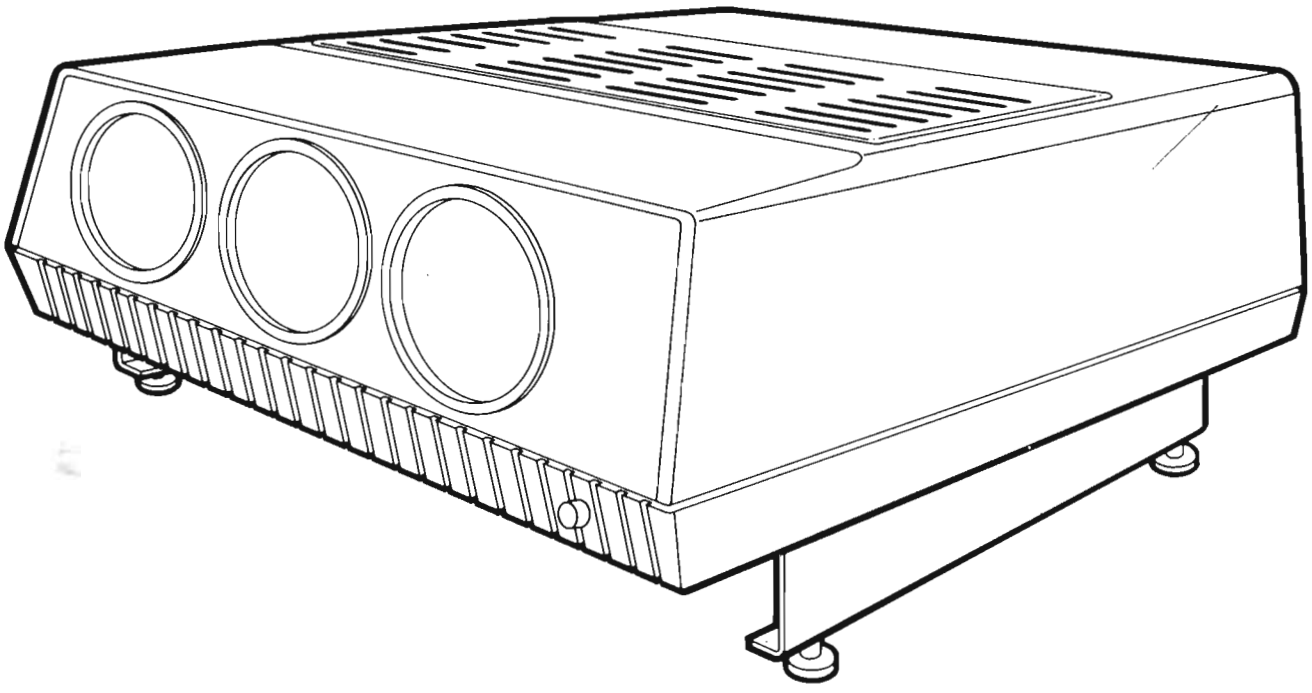
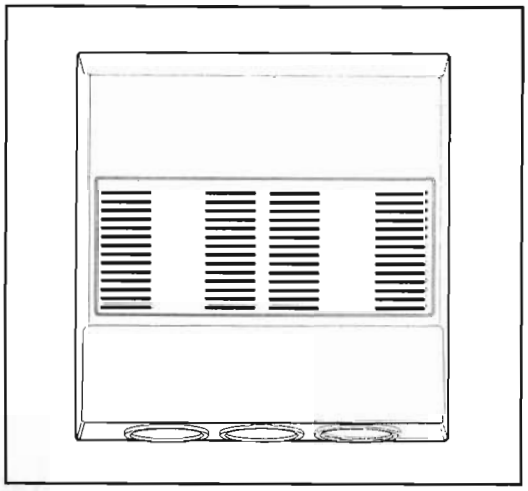
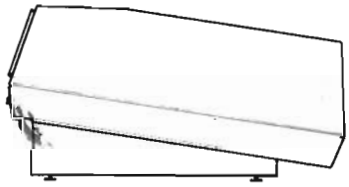
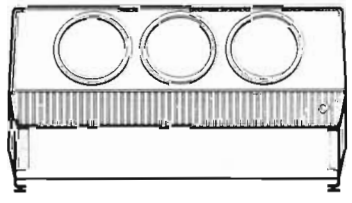
harman/kardon VIDEO PROJECTION MONITOR INSTALLATION MANUAL

VPM 500/VPM 600









GENERAL SET-UP PROCEDURE FOR VPM

ALL INFORMATION IS PERTINENT TO BOTH VPM 500 AND VPM 600

Assemble VPM as per instruction manual.

I. Floor Mounting:

(For ceiling mount, refer to Section VII at the end of this manual.)

A. When positioning the screen, make sure that the bottom of the screen is level with the bottom of the lens assembly.

B. When you have chosen the spot, mark the location of the feet with masking tape for reference should the installation be interrupted.

C. Remove the top cover by loosening the rear loader cover screw and side panel latches (2 per side). BE SURE THE REAR PANEL CONTROL DOOR IS CLOSED. Carefully, lift the cover from the rear of the unit and slide over the lens assembly.
WARNING: THE CIRCUIT BOARD AT THE REAR OF THE MACHINE CONTAINS HIGH VOLTAGE. AVOID CONTACT.

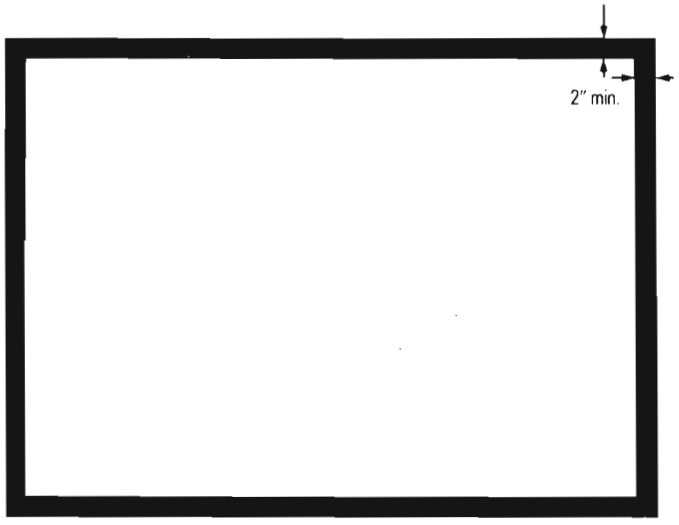


Figure 1

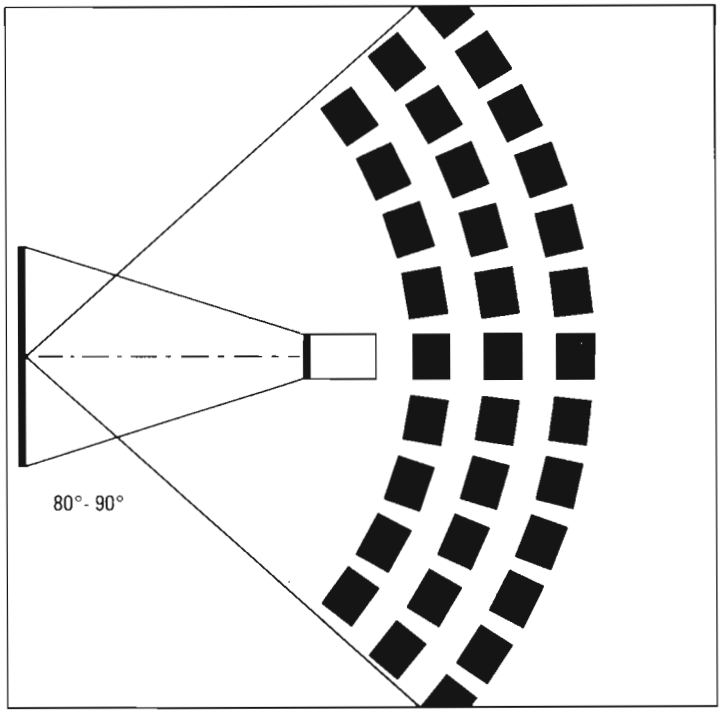


Figure 2

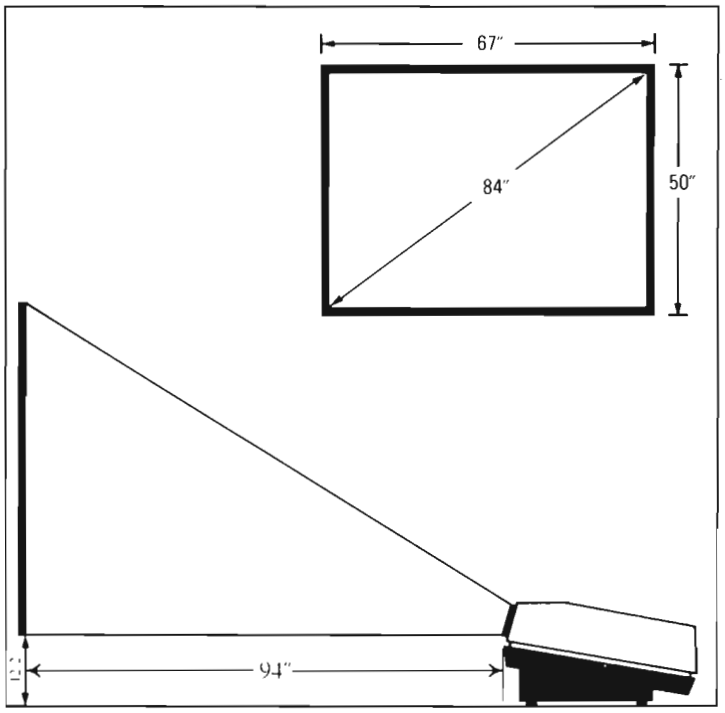


Figure 3

Screen-to-VPM500 distances. Other projection TV's allow only a few fixed screen sizes. One of the unique advantages of the VPM500 is its ability to offer an infinitely variable number of screen sizes between a 6-foot and 20-foot diagonal measurement, allowing you more flexibility in where the VPM500 projector can be placed on the floor. Some of the possibilities and relationships between screen size and projector distance are shown in the following chart:

SCREEN SIZE			PROJECTOR	
Diagonal Measurement		**Width & Height**	**DISTANCE**	**NOTE**
Feet	Inches	Inches	Inches	
6	72	57.6 x 43.2	80	**
7	84	67.2 x 50.4	94	*
10	120	96 x 72	135	**
12	144	115.2 x 86.4	163	**
15	180	144 x 108	205	**
20	240	192 x 144	275	**

* The VPM500 is precisely focused and aligned at the factory for installation on the floor or ceiling, with a flat screen for a 7-foot image and 94-inch projector-to-screen to be 12.2 inches above the floor (when the VPM500 is floor-mounted), or requires the top of the screen to be 12.2 inches below the ceiling (when the VPM500 is ceiling mounted). Large variations from these screen positions will require re-alignment by a qualified technician.

**The VPM500 can be precisely focused and aligned for this screen size and screen-to-projector distance (along with many others) by a qualified technician. The customer should not attempt to focus or align the VPM500 to this specification without a technician.

*** For a 5' screen contact the Harman Kardon VPM Technical Services Department for instructions.

Figure 4

II. Alignment Mode:

A. Connect a VCR, Video Disc Player or External Tuner to the VPM500 and turn both units on. The alignment procedure requires a **constant video signal.**

B. Locate the test pattern generator board (See Figures 7 and 5). Slide "SO1" to "cross-hatch", center, switch position.

C. Slide the "static convergence" switch "SO2" to the "adjust", rear, switch position.

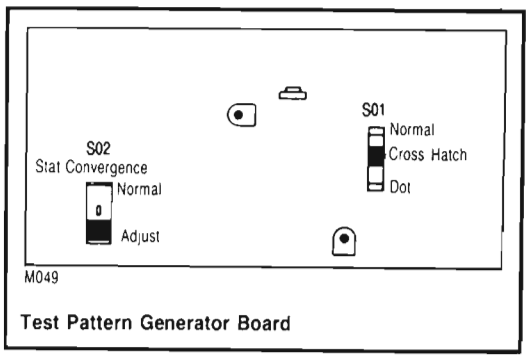


Figure 5

III. Focusing Procedure:

A. Put unit in alignment mode.

B. Uncover GREEN (center) LENS ONLY!

C. Loosen rear lens wingnut. (See Figure 7.)

D. Adjust lens for precise focus at center of the screen.

E. Tighten rear lens wingnut.

F. Loosen front lens wingnut. (See Figure 7.)

G. Adjust lens for precise focus at the edges of the screen.

H. Tighten front lens wingnut.

I. Slide "SO1" to the "dot", rear, switch position. (See Figure 6.)

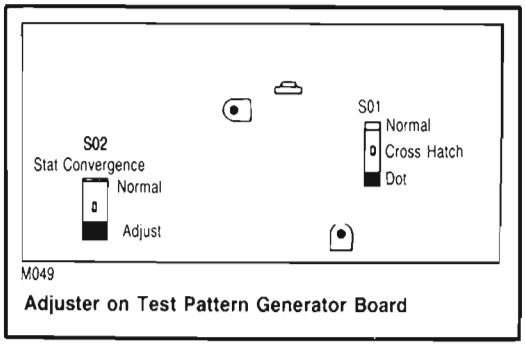


Figure 6

J. Locate electronic focus controls. (See Figure 7.)
K. Use electronic focus control, which corresponds to the color being adjusted, to obtain minimum dot size and maximum background darkness.
L. Return "SO1" to the "cross hatch", center, switch position.
M. Cover green lens.
N. Uncover RED LENS ONLY. Repeat steps C through L.
O. Cover red lens.
P. Uncover BLUE LENS ONLY. Repeat steps C through L.
Q. Cover blue lens.

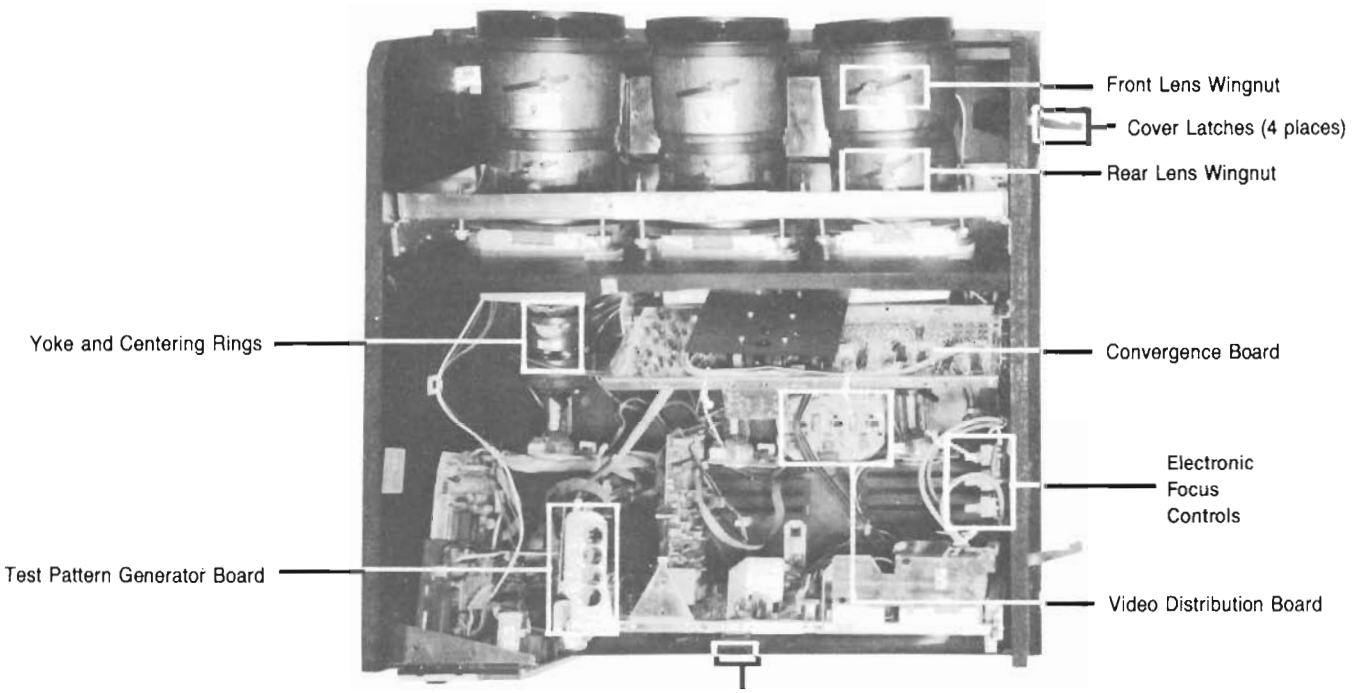


Figure 7

IV. Basic Geometric Alignment Procedure:

(Put unit in Alignment Mode.)

A. Center Horizontal Line:

1. Uncover GREEN LENS ONLY.
2. Check center horizontal line by standing at the side of the screen and sighting along that line. The line must be absolutely **straight.**
   •If it is straight, continue alignment procedure at step IV. 3.
   •If the line is not straight, locate the control marked "vertical bow" on the convergence board. Adjust until the line is straight. Make this adjustment looking at the center horizontal line only. For the moment, ignore everything else. (See Figures 8 and 9.)

3. Now that the center horizontal line is straight, check that it is parallel to the top of the screen. (See Figures 10 and 11.)
   •If it is parallel, go on to Section B on page 7.
   •If it is not parallel, see Figures 1,2 and 3 and repeat steps indicated; first check to see if projector is parallel to the screen. Adjust if necessary.
   •If both projector and screen are positioned properly, and the problem persists, follow the Yoke Adjustment Procedure below.

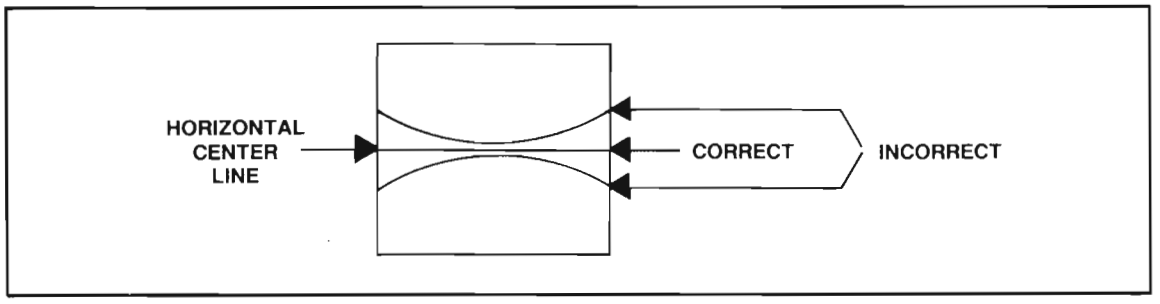


Figure 8

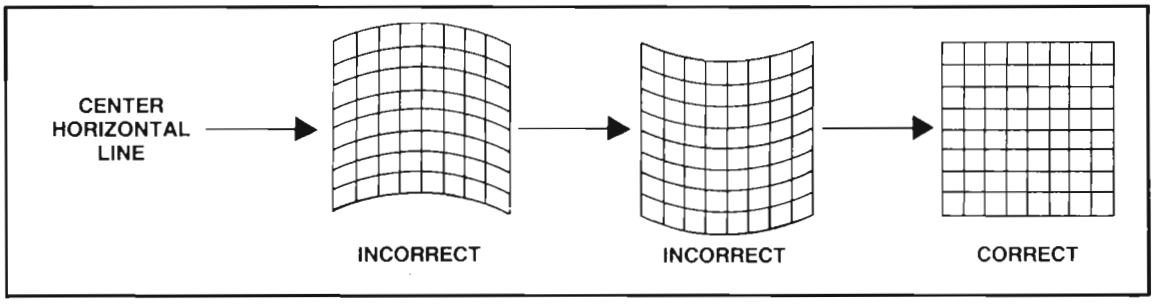


Figure 9

Yoke Adjustment Procedure: (See Figure 7.)
WARNING: THIS COURSE OF ACTION SHOULD BE TAKEN ONLY AFTER CAREFULLY CHECKING THE POSITION OF THE SCREEN AND PROJECTOR. CAUTION: HIGH VOLTAGE! CARE SHOULD BE TAKEN TO AVOID METAL TO METAL CONTACT AT THE NECK OF THE LENS.

1. Locate and loosen locking screws on both left and right brackets of convergence board (Removal of screws is unnecessary.) Slide the convergence board towards the rear of the unit, and tilt the board up until it locks into place. Remember to tighten these screws before recovering unit.

2. Locate the yoke key on the lens to be adjusted.
3. Loosen the key. The yoke can rotate both clockwise and counterclockwise, and can move forward and back. Be sure that the yoke can move freely.
4. To level the center horizontal line, rotate the yoke until the line is parallel with the top of the screen. (See Figures 10 and 11.) Check that the yoke is in its forwardmost position. Tighten the key.(Do Not Overtighten.)

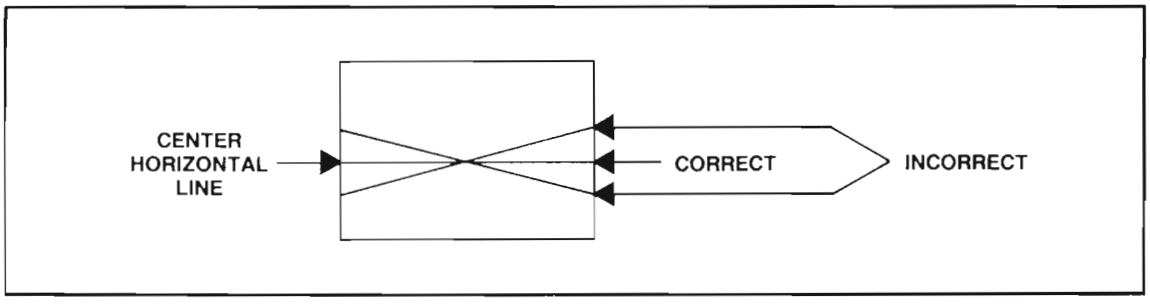


Figure 10

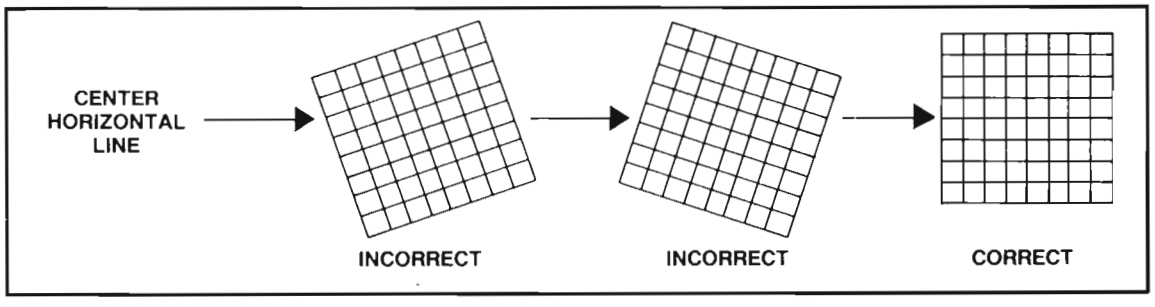


Figure 11

B. Center Vertical Line:

1. Check center vertical line by going to the screen and sighting upward. The line must be perfectly straight. (See Figures 12 and 13.)
   •If it is not straight, locate the control marked "horizontal bow." Adjust until line is straight. Again, for the moment, ignore all others.

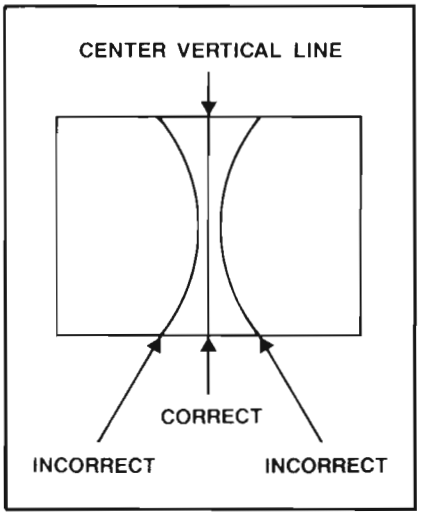


Figure 12

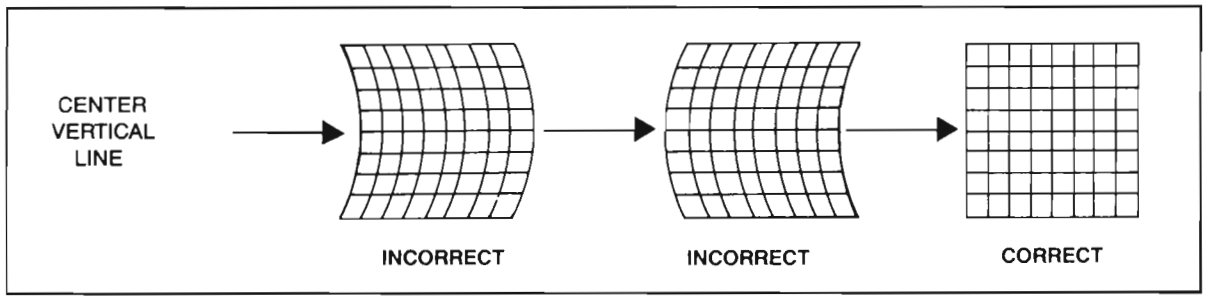


Figure 13

2. Now check that the center vertical line is parallel to the sides of the screen.
   - If it is parallel, go on to the next step.
   - If it is not, locate the control marked "skew" (See Figure 19.) and adjust to correct problem. (See Figures 14 and 15.)

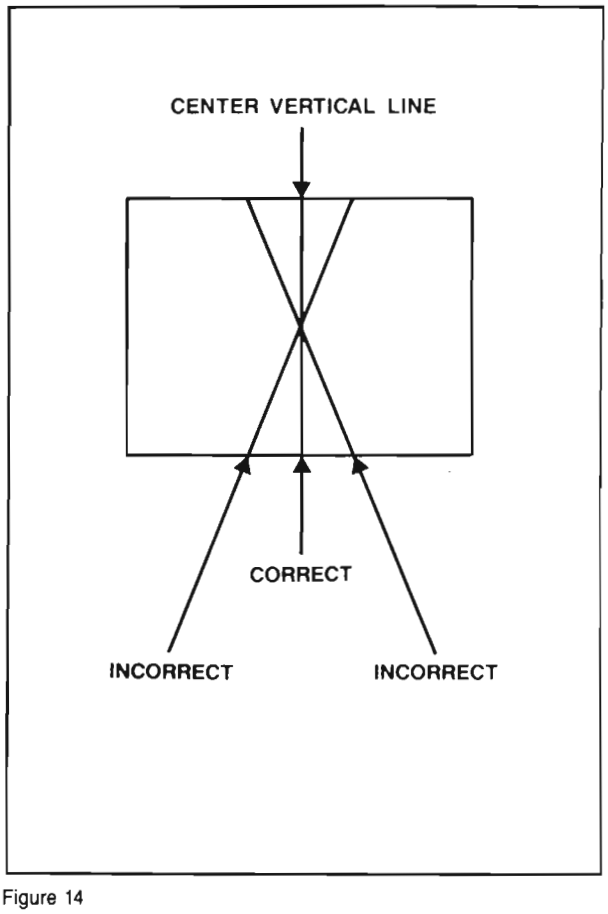


Figure 14

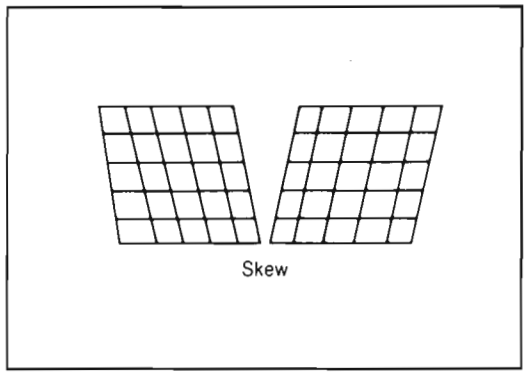


Figure 15

3. Now that the center horizontal and the center vertical lines are perfectly aligned, you can continue the geometric alignment.

(See Figure 19 for Convergence Control Layout.)

C. Horizontal Lines Above and Below the Center Line:

Use controls illustrated in Figures 16a: 17a, 17c, 18a, 18c of this manual.

Remember you are adjusting for perfectly straight and parallel horizontal lines only. Solve one problem at a time.

D. Vertical Lines to the Left and Right of the Center Line:

Use controls illustrated on Figures 16b: 17b, 17d, 18b, 18d.

Remember, you are adjusting for perfectly straight and parallel vertical lines only. Solve one problem at a time.

Note: Holes in the heatsink allow easy access through it to the nine controls located beneath it.

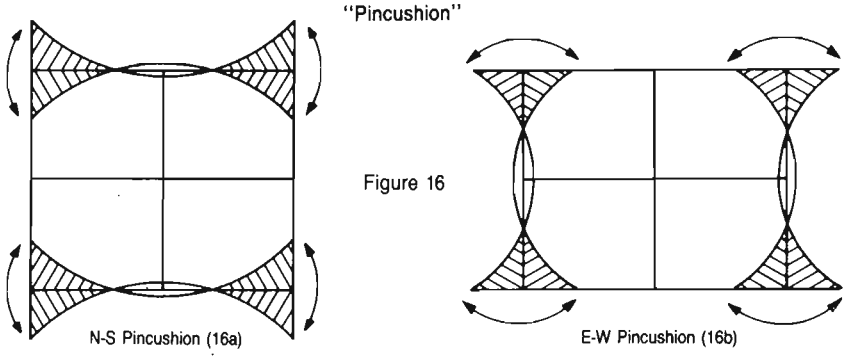


Figure 16

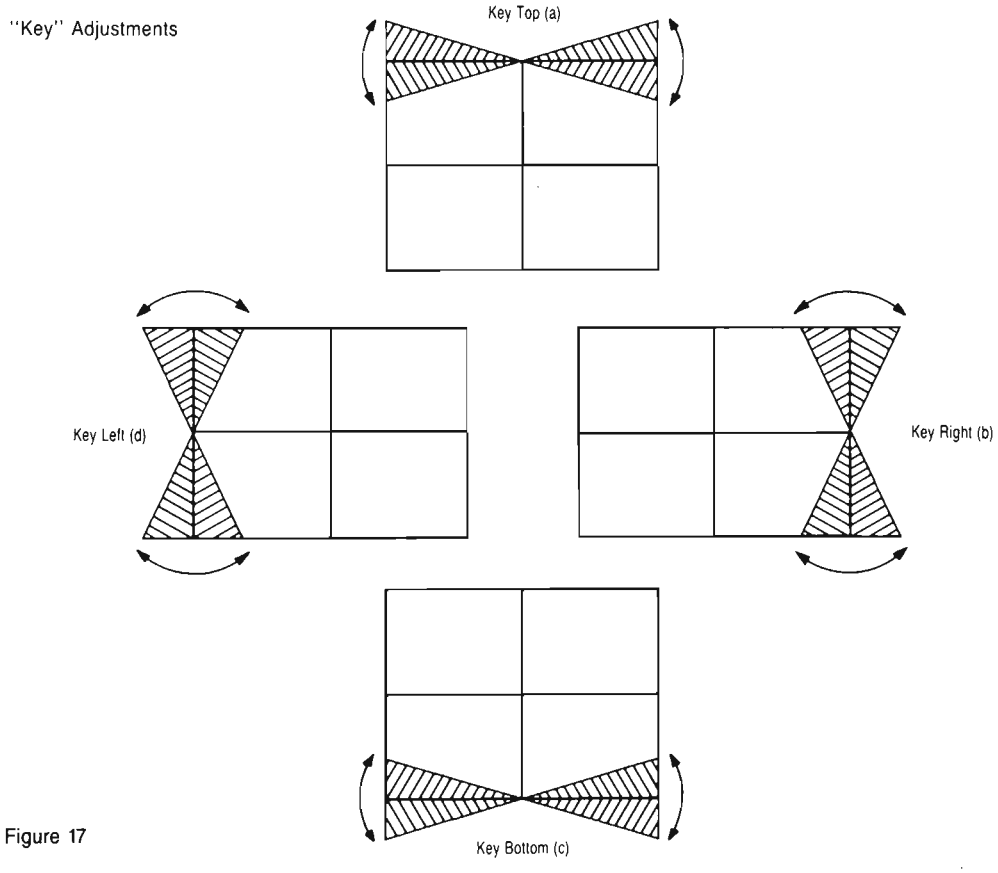


Figure 17

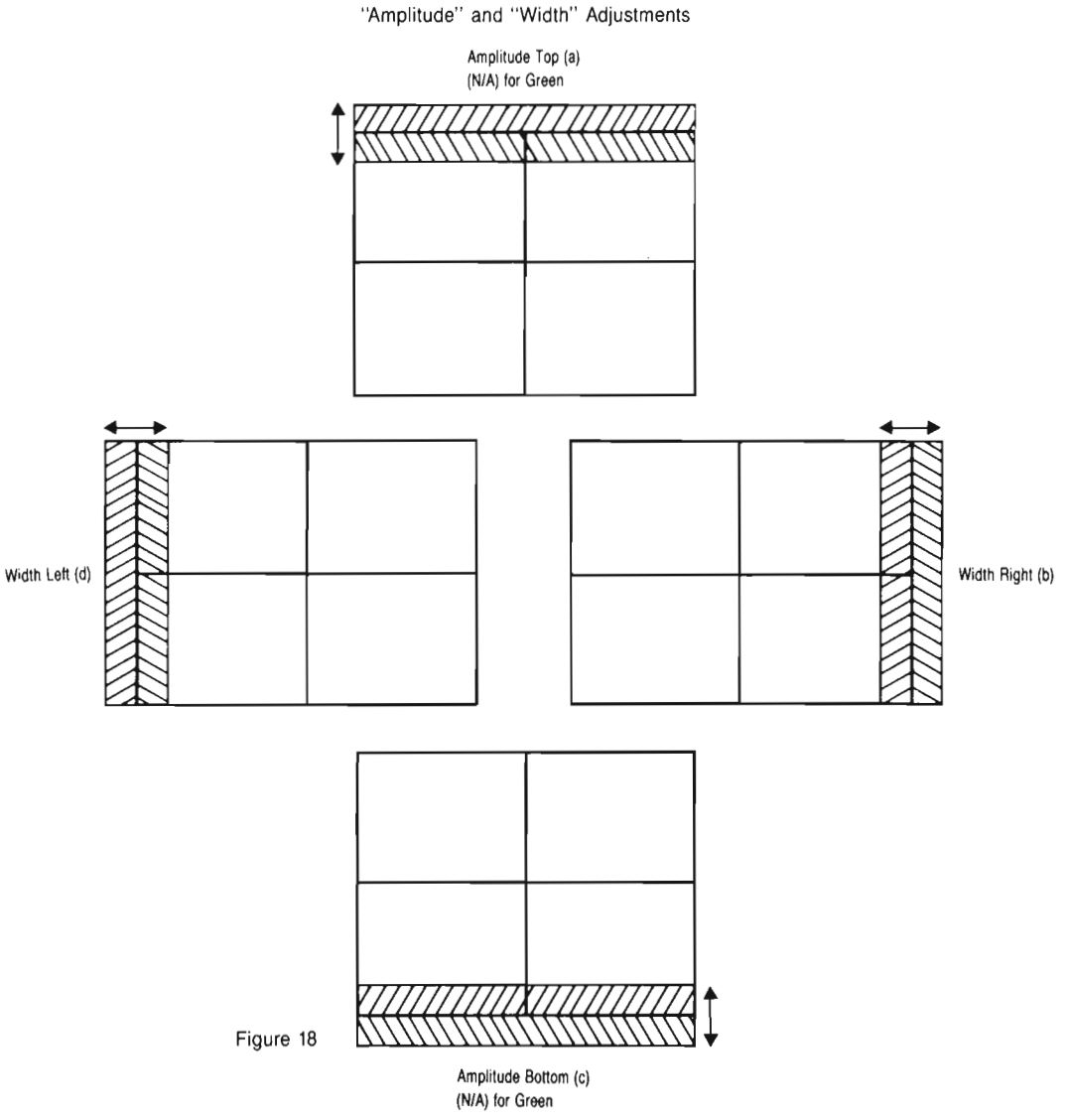


Figure 18

V. Color Convergence:

The object of this procedure is to align red to green first, and blue to green second. Use the geometric procedures outlined above as well as the controls illustrated in Figures 16 and 19 of this manual.

A. With only the RED LENS UNCOVERED, check for perfect geometric convergence (refer to geometric alignment procedure, Section IV, Steps A2 through B3).

B. UNCOVER GREEN LENS.

C. If the red and green center vertical and horizontal lines converge, and all other lines nearly overlay one another, complete convergence. You can proceed through Steps D — G of this section.
IF THIS CONDITION DOES NOT EXIST, REFER TO THE SECTION MARKED RING ADJUSTMENT ON PAGE 12.

D. When all red and green lines are converged, the cross hatch will be yellow. COVER RED LENS and UNCOVER BLUE LENS.

E. With the blue lens uncovered, check to see that the center vertical and horizontal lines are converged and that all other lines nearly overlay one another to complete convergence. IF THIS CONDITION DOES NOT EXIST, REFER TO THE SECTION MARKED RING ADJUSTMENT ON PAGE 12.

F. When red, blue and green are completely converged, the cross hatch will be white.

G. Locate the test generator board (See Figure 7). Slide the "static convergence" switch, "SO2", (Figure 5) to the normal position. Slide "SO1", (Figure 5) to the normal, forward position.

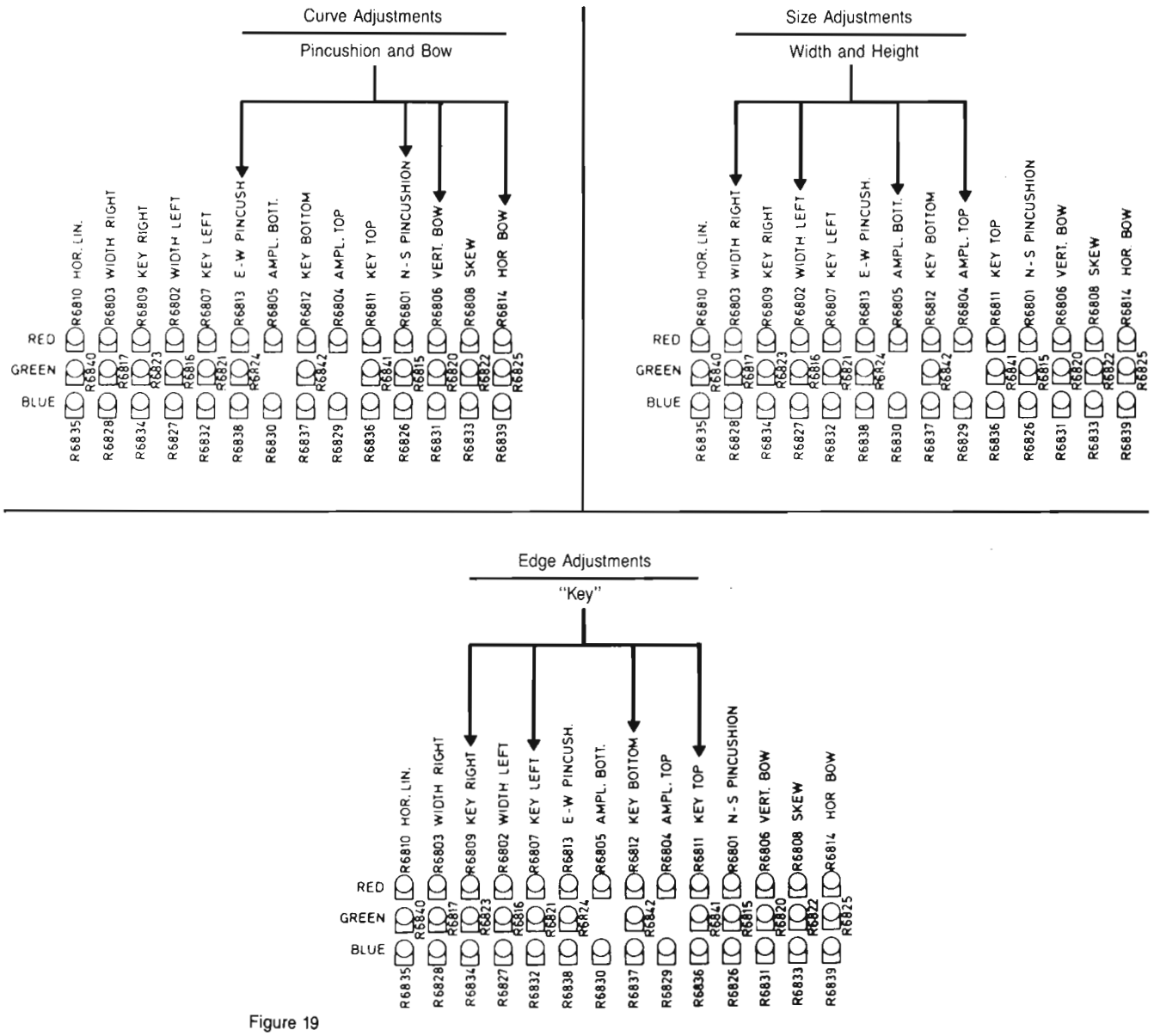


Figure 19

Ring Adjustment

CAUTION: HIGH VOLTAGE. GUARD AGAINST METAL TO METAL CONTACT AT THE NECK OF THE LENS.

1. Locate the two "centering rings" at the rear of the yoke assembly. (Refer to Figure 20.)
   Note: Loctite has been applied to prevent the rings from shifting. To begin the ring adjustment, the seal must be broken. This can be accomplished by moving the ring tabs toward one another.
2. Rotate the rings clockwise and counterclockwise. Note the effect. The crosshatch will move up and down, left and right. This is an interactive control and should be adjusted in small increments.
3. When the center horizontal and center vertical lines completely overlap one another, go back to the section marked color convergence and complete the convergence procedure.

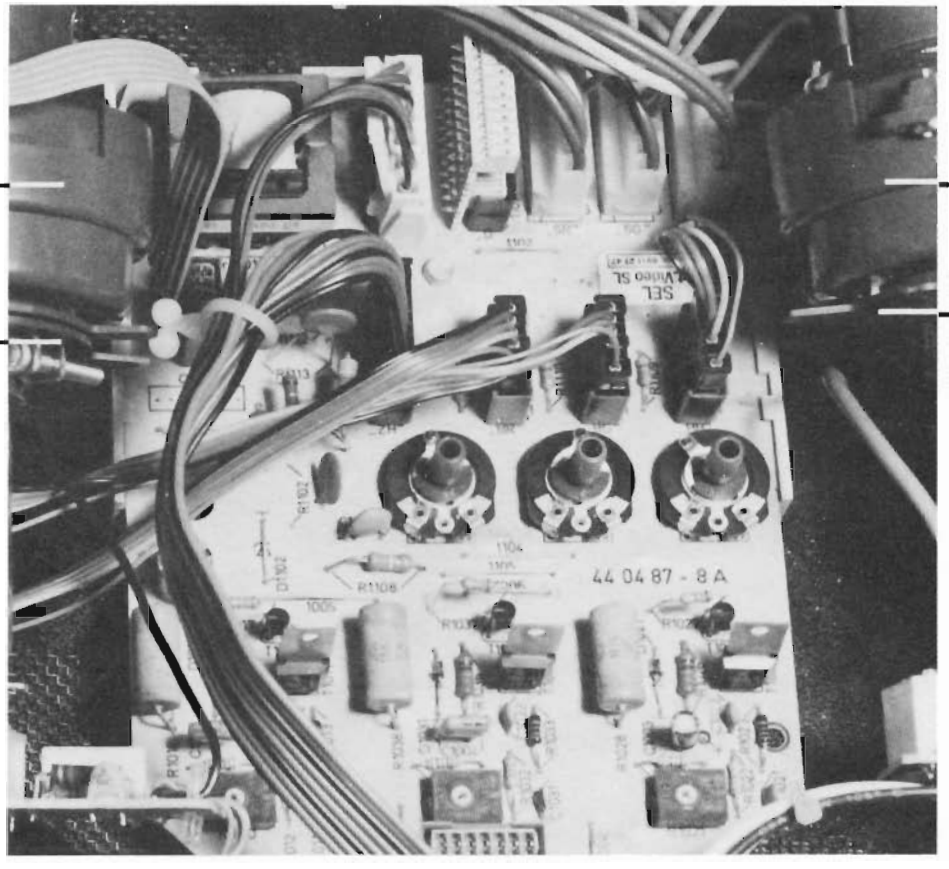


Figure 20

VI. Memory and Factory Settings:

Using the Remote Control, the following adjustments can be made:

•Contrast, Brightness, Tint, Color, Enhance, Red and Blue Horizontal Shift, Red and Blue Vertical Shift, Volume and Balance.

A. Standby Memory

When the VPM500 is switched to the Standby Mode, by pressing the "Off" Button on the Remote Control, all settings indicated above will be retained in the Standby Memory.

When the power to the VPM500 is interrupted or the Power Switch is switched to the off position, all video and audio settings will default to the "Factory" Preset Memory setting.

B. Preset Memory

When the "Preset" Button on the Remote Control is pressed, the following video parameters will be recalled from the "Factory" Preset Memory:
Contrast, Brightness, Tint, Color and Enhance.

C. Non-Volatile Factory Preset Memory (Normal Mode)

The following parameters can be stored in the "Factory" Preset Memory:
Contrast, Brightness, Tint, Color, Enhance and Volume.

To change the contents of the "Factory" Preset Memory:

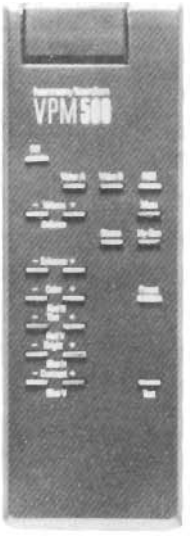
1. Use the Remote Control, or the controls located on the Control Panel to set up VPM500 for your own viewing pleasure.
2. Press the "Set Preset" Button on the VPM500 Control Panel.

D. Non-Volatile Factory Preset Memory (Test Mode)

The following parameters can be stored in the "Factory" Preset "Test" Memory:
Red and Blue Horizontal and Vertical Shift, L and R Audio Balance.

To change the contents of "Factory Test Mode" Memory:

1. Place the VPM500 in the 'Test" Mode by pressing "Test" Button on either the VPM500 or the Remote Control. A small test cross will appear on the center of the screen.
2. Adjust any of the five parameters above. The blue and red vertical and horizontal cross should be perfectly converged with the green.



VPM500
Infrared Wireless
Remote Control

Figure 21

3. Press the "Set Preset" Button on the VPM500 Control Panel.
4. Place the unit in the "normal" mode by pressing the "Test Mode" Pushbutton again. Crosshatch will disappear.

VII. Ceiling Mount:

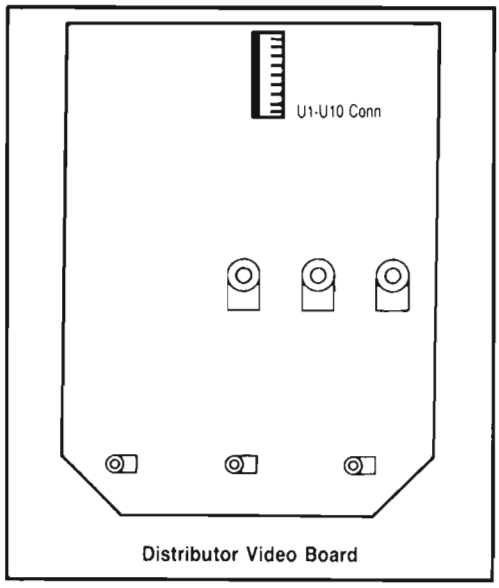


Figure 22

A. Make sure the power is off. Refer to precautions in Appendix 3 of the Owner's Manual.
B. Locate and loosen locking screws on both left and right brackets of the convergence board. Slide the convergence board toward the rear of the unit and tilt the board up until it locks into place.
C. Locate "distribution video board" under the convergence board, attached to the bottom of the chassis. (Refer to Figure 7.)
D. Locate and unplug "switch-over" board, U1-U10. (See Figure 22.)
E. Turn "switch-over" board 180 degrees. The lettering on rear of board will be upside-down.
F. Plug board in.
G. Lower convergence board.
H. Locate S6001 on convergence board underneath the left side of the heatsink (Figure 23).
I. Set switch to ceiling position.
J. Begin the focusing and convergence procedure at the section marked "Alignment Mode", page 4 of this manual.

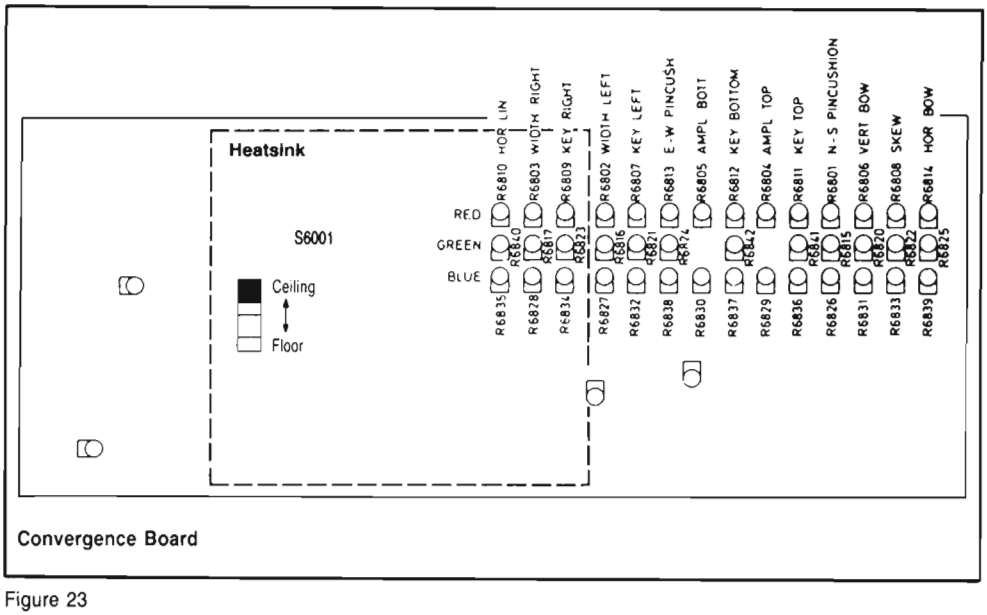


Figure 23

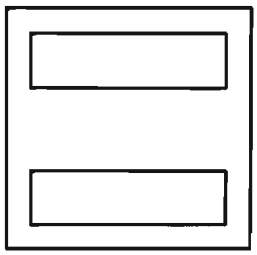
VIII. Rear Projection/Floor Mounting:

(For rear projection/ceiling mount, complete steps A—I below and then return to the Ceiling Mount Section, page 14 of this manual.)

A. Remove the top cover by loosening the rear loader cover screw and side panel latches (2 per side). BE SURE THE REAR PANEL CONTROL DOOR IS CLOSED. Carefully lift the cover from the rear of the unit.

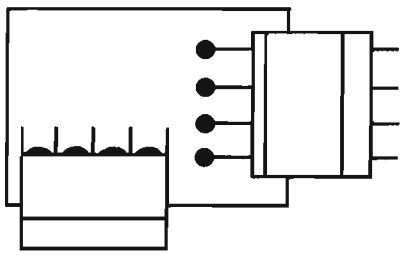
B. Locate the poly-bag contained in the VPM500 packing material. It contains the following items:

ITEM	ITEM NO.	QTY.
Switch-over board for rear projection (Figure 24)	4205-27-2	1
Polarity reversal boards (Figure 25)	4205-28-2	3



Switch-Over Board

Figure 24



Polarity Reversal Board

Figure 25

C. Locate the "heatsink" on the convergence board.
  1. Remove the six nuts and washers from the heatsink.
  2. Remove heatsink top plate.

D. Locate J2, J3 and J4 connectors to the left of the heatsink.

E. Remove the "J2" wire connector. Insert one "Polarity Reversal Board." Connect the J2 wire connector to the open end of the "Polarity Reversal Board." Repeat for J3 and J4.

F. Replace the heatsink top plate and the 6 nuts and washers.

G. Locate the "Video Distribution Board" (See Figure 7).

H. Remove "U1-U10" (Figure 22) and replace with U1-U10 connector supplied in the poly-bag (4205-27-2).

I. Continue set-up procedure as described on pages 1-12.